

**WE CLAIM:**

1. A composition comprising:  
2 a combination of non-ionic emulsifiers with anionic emulsifiers comprising a  
3 media sufficiently acidic to initiate acid reactive polymerization, wherein  
4 (of what)  
5 said anionic emulsifiers are selected from the group consisting of alkane sulfates,  
6 alkane sulfonates, and phosphate esters; and,  
said non-ionic emulsifiers comprise polyoxyethylene alcohols.

2. The composition of claim 1 wherein  
said anionic emulsifiers comprise from about 8 to about 18 carbon atoms; and  
said polyoxyethylene alcohols comprise from about 8 to about 30 carbon atoms  
and from about 3 to about 50 moles ethylene oxide.  
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3. The composition of claim 1 wherein said polyoxyethylene alcohols  
comprise from about 13 to about 15 carbon atoms.

4. The composition of claim 1 wherein said polyoxyethylene alcohols  
comprise from about 3 to about 20 moles ethylene oxide.

5. The composition of claim 2 wherein said polyoxyethylene alcohols  
comprise from about 3 to about 20 moles ethylene oxide.

6. The composition of claim 3 wherein said polyoxyethylene alcohols  
comprise from about 3 to about 20 moles ethylene oxide.

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1        7. The composition of claim 1 wherein said polyoxyethylene alcohols are  
2 selected from the group consisting essentially of linear polyoxyethylene alcohols,  
3 polyoxyethylene alcohols comprising about 10 moles ethylene oxide, and a combination  
4 thereof.

1        8. The composition of claim 2 wherein said polyoxyethylene alcohols are  
2 selected from the group consisting essentially of linear polyoxyethylene alcohols,  
3 polyoxyethylene alcohols comprising about 10 moles ethylene oxide, and a combination  
4 thereof.

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C' 1        9. The composition of claim 3 wherein said polyoxyethylene alcohols are  
2 selected from the group consisting essentially of linear polyoxyethylene alcohols,  
3 polyoxyethylene alcohols comprising about 10 moles ethylene oxide, and a combination  
4 thereof.

1        10. The composition of claim 1 wherein said combination comprises a blend  
2 of non-ionic emulsifier and anionic emulsifier at a ratio of about 50/50 to about 85/15.

1        11. The composition of claim 2 wherein said combination comprises a blend  
2 of non-ionic emulsifier and anionic emulsifier at a ratio of about 50/50 to about 85/15.

1        12. The composition of claim 4 wherein said combination comprises a blend  
2 of non-ionic emulsifier and anionic emulsifier at a ratio of about 50/50 to about 85/15.

1        13. . . The composition of claim 5 wherein said combination comprises a blend  
2        of non-ionic emulsifier and anionic emulsifier at a ratio of about 50/50 to about 85/15.

1        14. . . The composition of claim 6 wherein said combination comprises a blend  
2        of non-ionic emulsifier and anionic emulsifier at a ratio of about 50/50 to about 85/15.

1        15. . . The composition of claim 9 wherein said combination comprises a blend  
2        of non-ionic emulsifier and anionic emulsifier at a ratio of about 50/50 to about 85/15.

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1        16. . . The composition of claim 1 wherein said media has a pH of about 1 or  
2        less.

1        17. . . The composition of claim 2 wherein said media has a pH of about 1 or  
2        less.

1        18. . . The composition of claim 4 wherein said media has a pH of about 1 or  
2        less.

1        19. . . The composition of claim 5 wherein said media has a pH of about 1 or  
2        less.

1        20. . . The composition of claim 6 wherein said media has a pH of about 1 or  
2        less.

1        21. The composition of claim 7 wherein said media has a pH of about 1 or  
2 less.

1        22. The composition of claim 8 wherein said media has a pH of about 1 or  
2 less.

1        23. The composition of claim 9 wherein said media has a pH of about 1 or  
2 less.

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1        24. The composition of claim 15 wherein said media ahs a pH of about 1 or  
2 less.

1        25. The composition of claim 1 wherein said alkane sulfates, alkane  
2 sulfonates, and phosphate esters comprise from about 8 to about 12 carbon atoms.

1        26. The composition of claim 3 wherein said alkane sulfates, alkane  
2 sulfonates, and phosphate esters comprise from about 8 to about 12 carbon atoms.

1        27. The composition of claim 4 wherein said alkane sulfates, alkane  
2 sulfonates, and phosphate esters comprise from about 8 to about 12 carbon atoms.

1        28. The composition of claim 6 wherein said alkane sulfates, alkane  
2 sulfonates, and phosphate esters comprise from about 8 to about 12 carbon atoms.

1        29. The composition of claim 10 comprising about 10 wt.% or less of said  
2 combination of non-ionic emulsifiers with anionic emulsifiers.

1        30. A composition comprising:  
2              an emulsion comprising droplets comprising free hydrocarbons emulsified by a  
3              combination of non-ionic emulsifiers with anionic emulsifiers comprising  
4              a media sufficiently acidic to initiate acid reactive polymerization,  
5              wherein said anionic emulsifiers are selected from the group consisting of alkane  
6              sulfates, alkane sulfonates, and phosphate esters; and,  
7              said non-ionic emulsifiers comprise polyoxyethylene alcohols.

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1        31. The composition of claim 30 wherein  
2              said polyoxyethylene alcohols comprise from about 8 to about 18 carbon atoms;  
3              and,  
4              said polyoxyethylene alcohols comprise from about 8 to about 30 carbon atoms  
5              and from about 3 to about 50 moles ethylene oxide.

1        32. The composition of claim 30 wherein said polyoxyethylene alcohols  
2              comprise from about 13 to about 15 carbon atoms.

1        33. The composition of claim 32 wherein said polyoxyethylene alcohols  
2              comprise from about 3 to about 20 moles ethylene oxide.

1        34. The composition of claim 32 wherein said polyoxyethylene alcohols are  
2        selected from the group consisting essentially of linear polyoxyethylene alcohols,  
3        polyoxyethylene alcohols comprising about 10 moles ethylene oxide, and a combination  
4        thereof.

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1        35. The composition of claim 30 wherein said media has a pH of about 1 or  
2        less.

1        36. The composition of claim 34 wherein said media has a pH of about 1 or  
2        less.

1        37. The composition of claim 30 wherein said droplets are encapsulated by an  
2        encapsulating material.

1        38. The composition of claim 32 wherein droplets are encapsulated by an  
2        encapsulating material.

1        39. The composition of claim 34 wherein said droplets are encapsulated by an  
2        encapsulating material.

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1        40. The composition of claim 37 wherein said encapsulating material is a  
2        silicate.

1       41. The composition of claim 38 wherein said encapsulating material is a  
2       silicate.

1       42. The composition of claim 39 wherein said encapsulating material is a  
2       silicate.

1       43. A composition comprising:  
2           drill cuttings; and,  
3           an emulsion comprising droplets comprising free hydrocarbons emulsified by a  
4           combination of non-ionic emulsifiers with anionic emulsifiers in a media  
5           sufficiently acidic to initiate acid reactive polymerization,  
6       wherein said anionic emulsifiers are selected from the group consisting of alkane  
7       *SUR*  
8       *cj* sulfates, alkane sulfonates, and phosphate esters; and,  
said non-ionic emulsifiers comprise polyoxyethylene alcohols.

1       44. The composition of claim 43 wherein  
2           said polyoxyethylene alcohols comprise from about 8 to about 18 carbon atoms;  
3           and  
4           said polyoxyethylene alcohols comprise from about 8 to about 30 carbon atoms  
5           and from about 3 to about 50 moles ethylene oxide.

1       45. The composition of claim 44 wherein said polyoxyethylene alcohols  
2       comprise from about 13 to about 15 carbon atoms.

1       46.     The composition of claim 45 wherein said polyoxyethylene alcohols are  
2     selected from the group consisting essentially of linear polyoxyethylene alcohols,  
3     polyoxyethylene alcohols comprising about 10 moles ethylene oxide, and a combination  
4     thereof.

1       47.     The composition of claim 43 wherein said media has a pH of about 1 or  
2     less.

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*CJ*     1       48.     The composition of claim 45 wherein said media has a pH of about 1 or  
2     less.

1       49.     The composition of claim 47 wherein said droplets have a diameter of  
2     from about 3 microns to about 20 microns.

1       50.     The composition of claim 49 wherein said droplets have a diameter of  
2     about 10 microns or less.

1       51.     The composition of claim 48 wherein said droplets have a diameter of  
2     from about 3 microns to about 20 microns.

1       52.     The composition of claim 51 wherein said droplets have a diameter of  
2     about 10 microns or less.

1        53.     The composition of claim 43 wherein said droplets are encapsulated by an  
2     encapsulating material.

1        54.     The composition of claim 44 wherein droplets are encapsulated by an  
2     encapsulating material.

1        55.     The composition of claim 45 wherein said emulsion comprises droplets  
2     encapsulated by an encapsulating material.

1  
1        56.     The composition of claim 51 wherein said droplets are encapsulated by an  
2     encapsulating material.

1        57.     The composition of claim 52 wherein said droplets are encapsulated by an  
2     encapsulating material.

1        58.     The composition of claim 53 wherein said encapsulating material is a  
2     silicate.

1        59.     The composition of claim 54 wherein said encapsulating material is a  
2     silicate.

1        60.     The composition of claim 55 wherein said encapsulating material is a  
2     silicate.

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1           61.   The composition of claim 56 wherein said encapsulating material is a  
2   silicate.

1           62.   The composition of claim 57 wherein said encapsulating material is a  
2   silicate.

1           63.   A composition comprising:  
2           droplets comprising free hydrocarbons and emulsifier selected from the group  
3           consisting of non-ionic emulsifiers, anionic emulsifiers, and a  
4           combination thereof, said droplets being encapsulated by an  
5           encapsulating material;  
6           wherein said anionic emulsifiers are selected from the group consisting of alkane  
7           sulfates, alkane sulfonates, and phosphate esters; and,  
8           said non-ionic emulsifiers comprise polyoxyethylene alcohols.

1           64.   The composition of claim 63 wherein  
2           said anionic emulsifiers comprise from about 8 to about 18 carbon atoms; and  
3           said polyoxyethylene alcohols comprise from about 8 to about 30 carbon atoms  
4           and from about 3 to about 50 moles ethylene oxide.

1           65.   The composition of claim 63 wherein said polyoxyethylene alcohols  
2           comprise from about 13 to about 15 carbon atoms.

1           66. The composition of claim 64 wherein said polyoxyethylene alcohols  
2 comprise from about 3 to about 20 moles ethylene oxide.

1           67. The composition of claim 65 wherein said polyoxyethylene alcohols  
2 comprise from about 3 to about 20 moles ethylene oxide.

1           68. The composition of claim 63 wherein said polyoxyethylene alcohols are  
2 selected from the group consisting essentially of linear polyoxyethylene alcohols,  
3 polyoxyethylene alcohols comprising about 10 moles ethylene oxide, and a combination  
4 thereof.

1        69. The composition of claim 65 wherein said polyoxyethylene alcohols are  
2 selected from the group consisting essentially of linear polyoxyethylene alcohols,  
3 polyoxyethylene alcohols comprising about 10 moles ethylene oxide, and a combination  
4 thereof.

1           70. The composition of claim 63 wherein said combination comprises a blend  
2 of non-ionic emulsifier and anionic emulsifier at a ratio of about 50/50 to about 85/15.

1           71. The composition of claim 67 wherein said combination comprises a blend  
2       of non-ionic emulsifier and anionic emulsifier at a ratio of about 50/50 to about 85/15.

1 72. The composition of claim 63 comprising a pH of about 4 or less.

1           73.     The composition of claim 67 comprising a pH of about 4 or less.

1           74.     A composition comprising droplets comprising free hydrocarbons, said  
2     droplets having a diameter of from about 3 microns to about 20 microns and being  
3     encapsulated by an encapsulating material.

1           75.     The composition of claim 74 wherein said encapsulating material is a  
2     silicate.

1           76.     The composition of claim 75 further comprising drill cuttings.

1           77.     A composition comprising a droplets comprising a quantity of free  
2     hydrocarbons, said droplets being encapsulated by an encapsulating material effective to  
3     maintain a leachate of about 0.5% or less of said quantity of free hydrocarbons.

1           78.     The composition of claim 77 wherein said leachate is about 0.25% or less  
2     of said quantity of free hydrocarbons.

1           79.     The composition of claim 77 wherein said leachate is about 0.05% or less  
2     of said quantity of free hydrocarbons.

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